

### REMARKS

Claims 26-37 are pending in the present application. Claims 36 and 37 are amended. Reconsideration of the claims is respectfully requested.

**I. 35 U.S.C. § 102, Anticipation**

The Office Action rejects claims 26-29 and 32-37 under 35 U.S.C. § 102 as being anticipated by *Mandal et al.* (US Patent No. 5,670,210). This rejection is respectfully traversed.

With respect to claims 26-29 and 32-37, the Office Action states:

Mandal et al teaches a housing 14 that includes an opening to allow a substrate to pass into the chamber; a rotating chuck 12 for holding and spinning the substrate; a dispersing head 54 to deposit a precursor on the substrate; and a vapor dispense head 20. The showerhead is connected to a catalyst source 34, and a gas mixture source 26 containing nitrogen and water vapor (column 4 line 61 through column 5 line 32). (Figures 1 and 2, and throughout the specification)

The specific substance supplied to an apparatus, the specific substrate processed in an apparatus, the specific carrier gas to vapor ration, and operating pressures are an intended use of the apparatus. Mandal et al is inherently capable of delivering any substance (solvent or catalyst) to the showerhead, which evenly distributes the substance over the substrate, can be used to process substrates for an integrated circuit or a chemical sensor (or any other device), supply a specific vapor ratio and operate at a specific pressure.

Office Action, dated August 20, 2003. Applicant respectfully disagrees. *Mandal* teaches an apparatus and method for uniformly coating a substrate. More specifically, *Mandal* teaches a housing 14; a chuck 12 located within the housing, wherein the chuck is configured to hold the substrate for processing and wherein the substrate may be spun using the chuck; an inlet 54 within the housing, wherein the inlet is configured for connection to a source; and a dispenser 20, wherein the dispenser is configured to receive a solvent and introduce the solvent into the housing.

In contradistinction, claim 26 recites:

26. An apparatus comprising:  
a housing;

an opening in the housing configured to pass a substrate into the housing;

a chuck located within the housing, wherein the chuck is configured to hold the substrate for processing and wherein the substrate may be spun using the chuck;

an inlet within the housing, wherein the inlet is configured for connection to a source for a precursor silica solution and wherein the inlet is configured to deposit the precursor silica solution onto the substrate held by the chuck and wherein a film of the precursor solution may be formed on the substrate; and

a vapor dispense head, **wherein the vapor dispense head is configured to receive a catalyst and introduce the catalyst onto the wafer in a uniform manner such that the catalyst becomes homogeneously diffused into the film and forms pores in the film, and**

**wherein the vapor dispense head is configured to receive a gas mixture and introduce the gas mixture into the housing during a drying phase to maintain capillary pressure within the pores formed in the film.** [emphasis added]

*Mandal* also fails to teach or suggest a vapor dispense head that is configured to receive and introduce a catalyst to form pores in the film **and** to receive and introduce a gas mixture to maintain capillary pressure in the pores, as recited in claim 26.

The Office Action also states:

In regard to the argument that *Mandal et al* does not teach a vapor dispense head that is configured to receive and introduce a catalyst and a gas mixture, the examiner disagrees. As was discussed above *Mandal et al* teaches a dispense head that is configured to receive and introduce a catalyst (feed line 28) and to receive and introduce a gas mixture (feed line 26) of figure 1.

Office Action, dated August 20, 2003. Applicant respectfully disagrees. While *Mandal* does teach a vapor dispense head that receives a mixture of gas and vapor, *Mandal* does not teach the specific limitations of claim 26. More specifically, *Mandal* does not teach or suggest a vapor dispense head that is configured to receive and introduce a catalyst to form pores in the film **and** to receive and introduce a gas mixture to maintain capillary pressure in the pores, as recited in claim 26.

Since claims 27-29 and 32-37 depend from claim 26, the same distinctions between *Mandal* and the invention recited in claim 26 apply for these claims. Additionally, claims 27-29 and 32-37 recite other additional combinations of features not

suggested by the reference. Consequently, it is respectfully urged that the rejection of claims 26-29 and 32-37 is overcome.

The Office Action dismisses claim limitations, because the apparatus of *Mandal* is allegedly "inherently capable" of the claim limitations. The Office Action misapplies the concept of "inherent" anticipation. Section 102 of Title 35 deals with novelty and loss of patent rights. An invention is said to be "anticipated" when it is squarely described or disclosed in a single reference as identified from one of the categories of 35 U.S.C. § 102, commonly referred to as "prior art." Express anticipation occurs when the invention is expressly disclosed in the prior art, patent or publication. In some cases, however, when the claimed invention is not described *in haec verba*, the "doctrine of inherency" is relied on to establish anticipation. Under the principles of inherency, a claim is anticipated if a structure in the prior art necessarily functions in accordance with the limitations of a process or method claim. *In re King*, 801 F.2d 1324, 231 U.S.P.Q. 136 (Fed. Cir. 1986).

A prior art reference that discloses all of a patent's claim limitations anticipates that claim even though the reference does not expressly disclose the "inventive concept" or desirable property the patentee discovered. *Verdgaal Brothers, Inc. v. Union Oil Company of California*, 814 F.2d 628, 2 U.S.P.Q.2d 1051, (Fed. Cir. 1987). It suffices that the prior art process inherently possessed at that property. *Id.* Mere possibilities or even probabilities, however, are not enough to establish inherency. The missing claimed characteristics must be a "natural result" flowing from what is disclosed. *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 20 U.S.P.Q.2d 1746 (Fed. Cir. 1991). Unstated elements in a reference are inherent when they exist as a "matter of scientific fact." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 7 U.S.P.Q.2d 1057 (Fed. Cir.), cert. denied, 488 U.S. 892 (1988) and *Hughes Aircraft Co. v. United States*, 8 U.S.P.Q.2d 1580 (Ct. Cl. 1988). Otherwise, the invention is not inherently anticipated.

In the present case, the assertion in the Office Action that these elements are present can be made only through the use of Applicant's disclosure as a template to fill in the missing elements. The dispense head of *Mandal* is not necessarily configured to receive and introduce a catalyst to form pores in the film and to receive and introduce a gas mixture to maintain capillary pressure in the pores. Nor is this a natural result

flowing from what is disclosed or a matter of scientific fact. Instead, the Office Action uses the doctrine of inherency to summarily dismiss the claim limitations

More particularly, claim 36 recites, "wherein the apparatus is configured to increase a carrier gas to vapor ratio from a first ratio during deposition and spinning to a second ratio during drying." Again, the apparatus of *Mandal* is not necessarily configured to increase a carrier gas to vapor ratio from a first ratio during deposition and spinning to a second ratio during drying. To the contrary, *Mandal* states, "[w]hen humid air is supplied the relative humidity is maintained at a level required by the polymer solution: typically between 40% and 45%." See *Mandal*, col. 5, lines 28-30. Therefore, not only are the claim limitations not inherent taught by the reference, but *Mandal* expressly teaches away from the features recited in claim 36. As such, claim 36 is not anticipated by *Mandal*, as alleged in the Office Action.

Claim 37 recites, "wherein the apparatus is configured to introduce the gas mixture into the housing at a first pressure and to reduce a pressure of the gas mixture to an ambient pressure during the drying phase." Again, the apparatus of *Mandal* is not necessarily configured to introduce the gas mixture into the housing at a first pressure and to reduce a pressure of the gas mixture to an ambient pressure during the drying phase. As such, claim 37 is not anticipated by *Mandal*, as alleged in the Office Action.

Furthermore, *Mandal* does not teach, suggest, or give any incentive to make the needed changes to reach the presently claimed invention. Absent the Office Action pointing out some teaching or incentive to modify the apparatus of *Mandal* to be configured to introduce a catalyst for forming pores within the film and to introduce a gas mixture to maintain capillary pressure within the pores, one of ordinary skill in the art would not be led to modify the applied references to reach the present invention when the reference is examined as a whole. Absent some teaching, suggestion, or incentive to modify the applied prior art in this manner, the presently claimed invention can be reached only through an improper use of hindsight using Applicant's disclosure as a template to make the necessary changes to reach the claimed invention.

## II. 35 U.S.C. § 103, Obviousness

The Office Action rejects claims 30 and 31 under 35 U.S.C. § 103 as being unpatentable over *Mandal* in view of *Santini* (US Patent No. 4,696,729). This rejection is respectfully traversed.

*Santini* teaches a showerhead that is made out of a perforated plate and an equivalent embodiment in which the showerhead is a polytetrafluoroethylene screen. As stated above, *Mandal* fails to teach or suggest a vapor dispense head that is configured to receive and introduce a catalyst to form pores in the film and to receive and introduce a gas mixture to maintain capillary pressure in the pores. *Santini* does not make up for the deficiencies of the primary reference. Since the applied references, taken alone or in combination, fail to teach or suggest each and every claim limitation, the combination of *Mandal* and *Santini* does not render the claimed invention obvious.

Therefore, the rejection of claims 30 and 31 under 35 U.S.C. § 103 is overcome.

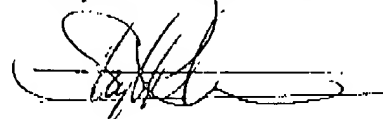
## III. Conclusion

It is respectfully urged that the subject application is patentable over the prior art of record and is now in condition for allowance.

The examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,



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